

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
28 April 2005 (28.04.2005)

PCT

(10) International Publication Number  
**WO 2005/037743 A1**

- (51) International Patent Classification<sup>7</sup>: C07C 19/08, 17/21, 17/04, 17/23
- (21) International Application Number:  
PCT/US2004/034454
- (22) International Filing Date: 13 October 2004 (13.10.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/511,284 14 October 2003 (14.10.2003) US
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROCESS FOR THE PREPARATION OF 1,1,1,3,3-PENTAFLUOROPROPANE AND 1,1,1,2,3-PENTAFLUOROPROPANE

(57) Abstract: A process is disclosed for the manufacture of  $\text{CF}_3\text{CH}_2\text{CHF}_2$  and  $\text{CF}_3\text{CHFCH}_2\text{F}$ . The process involves (a) reacting hydrogen fluoride, chlorine, and at least one halopropene of the formula  $\text{CX}_3\text{CCl}=\text{CClX}$  (where each X is independently F or Cl) to produce a product including both  $\text{CF}_3\text{CCl}_2\text{CClF}_2$  and  $\text{CF}_3\text{CClFCCl}_2\text{F}$ ; (b) reacting  $\text{CF}_3\text{CCl}_2\text{CClF}_2$  and  $\text{CF}_3\text{CClFCCl}_2\text{F}$  produced in (a) with hydrogen to produce a product including both  $\text{CF}_3\text{CH}_2\text{CHF}_2$  and  $\text{CF}_3\text{CHFCH}_2\text{F}$ ; and (c) recovering  $\text{CF}_3\text{CH}_2\text{CHF}_2$  and  $\text{CF}_3\text{CHFCH}_2\text{F}$  from the product produced in (b). In (a), the  $\text{CF}_3\text{CCl}_2\text{CClF}_2$  and  $\text{CF}_3\text{CClFCCl}_2\text{F}$  are produced in the presence of a chlorofluorination catalyst including a  $\text{ZnCr}_2\text{O}_4$ /crystalline  $\alpha$ -chromium oxide composition, a  $\text{ZnCr}_2\text{O}_4$ /crystalline  $\alpha$ -chromium oxide composition which has been treated with a fluorinating agent, a zinc halide/ $\alpha$ -chromium oxide composition and/or a zinc halide/ $\alpha$ -chromium oxide composition which has been treated with a fluorinating agent.



WO 2005/037743 A1